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INTRODUCTION TO THE CORRECTIVE ACTION STABILIZATION QUESTIONNAIRE

Decision Strategy

The question of whether to implement stabilization measures at a RCRA facility undergoing some phase of corrective action should be answered based upon a series of policy and technical judgments. Many of these individual judgments are difficult to quantify and, therefore, must be based upon the professional judgment of Federal and State environmental regulators responsible for implementing the RCRA corrective action program. These judgments, as a group, should form a basis upon which the relative benefits to be gained through stabilization at a particular facility are weighed. The types of benefits envisioned through facility stabilization include limited contaminant migration, reduced volume of contaminated media, and lowered risk to human health and the environment.

The attached questionnaire attempts to prompt the decision making process by asking both policy and technical questions regarding stabilization of a facility. For each question, a short discussion of the importance and relevance of the answer is provided below. It may be useful to refer to these short discussions as the questionnaire is completed.

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Background Facility Information

Question 1 — Is this checklist being completed for one solid waste management unit (SWMU), several SWMUs, or the entire facility? Explain.

A strategy for stabilization may be considered or implemented for either an entire facility, a specific SWMU, or a group of SWMUs. Stabilization activities, while addressing releases from one or more SWMUs, are likely to concentrate on a specific environmental medium, such as ground water, surface water, air, or soil. The SWMU(s) and media being considered for stabilization should be recorded in the spaces provided.

Status of Corrective Action Activities at the Facility

Question 2 — What is the current status of HSWA corrective action activities at the facility?

The current status of HSWA corrective action activities is a major factor for consideration when deciding whether and when to implement a stabilization strategy at a particular facility. Stabilization should be considered an option at a facility up until the point where it becomes more expedient and cost-effective to implement the final corrective measures. Generally, the immediate implementation of final corrective measures, rather than stabilization measures, becomes more efficient after the Corrective Measures Study (CMS) is completed, because the effort and resources that might be used to plan, design, and construct stabilization structures may be more effectively spent on Corrective Measures Implementation (CMI).

Interim measures may be implemented at any point in the corrective action process, and if they have been implemented, they should be noted on the questionnaire in addition to the other activities listed.

Question 3 — If corrective action activities have been initiated, are they being carried out under a permit or an enforcement order?

Corrective action activities are usually carried out under the authority of either a RCRA operating or post-closure permit, or under a RCRA §3008(h) administrative order. The authority used for an ongoing corrective action project at a particular facility will affect the ease with which a stabilization strategy can be incorporated into an existing compliance schedule. The extra time needed for public comment, State concurrence, and other administrative requirements associated with modifying or revising either a permit or an order (to incorporate stabilization) should be taken into account when considering whether stabilization is appropriate for a given facility because as the time required to address procedural requirements increases, the benefits potentially derived from stabilization decrease.

Question 4 — Have interim measures, if required or completed [See Question 2], been successful in preventing the further spread of contamination at the facility?

If interim measures have been implemented at a facility and they have been successful in preventing the further spread of contamination from all significant releases, stabilization has, in effect, been accomplished. In this case, additional stabilization measures should not be required. Conversely, if interim measures have not been carried out, or if they have not been successful in limiting the spread of contamination, stabilization measures should eventually be considered for this facility.

EPA is currently evaluating facilities for stabilization based upon the priority ranking a facility receives under the RCRA National Corrective Action Prioritization System. At this time, the Agency is only evaluating those facilities that have been ranked as "high" priorities. Therefore, the attached questionnaire need only be completed when evaluating those facilities ranked as high priorities and where interim actions are not yet under way or have been unsuccessful in preventing the further spread of contamination at the facility.

Facility Releases and Exposure Concerns

Question 5 — To what media have contaminant releases from the facility occurred or been suspected of occurring?

Releases of hazardous materials to any environmental media are a serious concern. Stabilization measures are generally technically feasible for any of the four environmental media (ground water, surface water, air, or soils), and stabilization should be considered wherever this type of action could limit the further spread of contaminant migration.

Question 6 — Are contaminant releases migrating off-site?

Off-site migration of contaminants generally indicates the need for some stabilization measure to limit contaminant movement until final corrective measures can be implemented.

Questions 7a and 7b

Are humans currently being exposed to contaminants released from the facility?

Is there a potential for human exposure to the contaminants released from the facility over the next five to 10 years?

The actual occurrence, or the near- to mid-term (i.e., within five to 10 years) potential, of human exposure to released contaminants is a factor supporting the implementation of stabilization measures. The type of exposure that has occurred is an important consideration in determining the type of stabilization measure employed for a facility or SWMU. The stabilization measure considered should eliminate or significantly reduce the human exposure levels at and near the facility.

The make-up of the exposed population (e.g., facility employees, nearby home owners, school children, nursing home residents) and the duration of exposure are factors that should be considered when determining the type of stabilization or corrective measure to be implemented. Exposure of high-risk populations, such as children, may require the implementation of "real-time" stabilization measures, perhaps even emergency measures, to immediately reduce the contaminant levels near that population sooner than may be possible with final corrective measures.

The potential short-term and long-term effects of human exposure to released contaminants should be considered when determining the need for stabilization measures. Any significant exposure concern is a factor in favor of implementing stabilization measures.

Questions 8a and 8b

Are environmental receptors currently being exposed to contaminants released from the facility?

Is there a potential that environmental receptors could be exposed to the contaminants released from the facility over the next five to 10 years?

The existence of potential threats to the environment from the release of hazardous constituents is to be considered a factor in favor of implementing stabilization measures. Environmental receptors include terrestrial and aquatic organisms, food chain plants and animals, vital ecology or potential natural resources, and Class I or other aquifers. The time frame over which these threats may materialize (i.e., will the threat materialize before final corrective measures can be implemented) should be used to determine the immediacy of the need for stabilization measures.

Anticipated Final Corrective Measures

Question 9

If already identified or planned, would final corrective measures be able to be implemented in time to adequately address any existing or short-term threat to human health and the environment?

Final corrective measures, which sometimes can be identified early in the RFI, should always be designed to reduce or eliminate, to the degree practicable, both short-term and long-term risks posed by the release of hazardous constituents. If final corrective measures are currently being planned or constructed, it is unlikely that any relatively new stabilization measures could be implemented fast enough to be more effective in reducing short-term threats to human health and the environment. Therefore, if final corrective measures have reached the planning stages, it should be considered a factor against the implementation of stabilization measures.

Questions 10 and 11 Could a stabilization initiative at this facility reduce the present or near-term (e.g., less than two years) risks to human health and the environment?

If a stabilization activity were not begun, would the threat to human health and the environment significantly increase before final corrective measures could be implemented?

If it can be determined that a "fast-track," or quickly implementable, stabilization measure could significantly reduce the present or near-future risks to human health and the environment, stabilization measures should be favorably considered. Similarly, if it can be determined that the absence of stabilization measures would result in a significantly greater risk to human health and the environment, stabilization measures should be favorably considered.

Technical Ability to Implement Stabilization Activities

Question 12 In what phase does the contaminant exist under ambient site conditions?

The physical phase of a contaminant will affect the technical practicability of stabilization. See Attachment A for a preliminary analysis of types of waste constituents that may be stabilized by various remediation technologies.

Question 13 Are one or more of the following major chemical groupings of concern at the facility?

Some contaminants are more amenable to stabilization techniques than others. See Attachment A for a preliminary analysis of types of waste constituents that may be stabilized by various remediation technologies.

Question 14 Are appropriate stabilization technologies available to prevent the further spread of contamination, based on contaminant characteristics and the facility's environmental setting? [See Attachment A for a listing of potential stabilization technologies.]

The implementation of stabilization measures is, of course, dependent upon the availability of appropriate technologies and techniques. Attachment A lists a series of hazardous waste site remediation technologies and techniques that have potential applicability for stabilization of certain wastes under certain conditions. If there are no identified technologies appropriate for stabilizing contamination at this facility, this evaluation is complete and the rest of this questionnaire need not be completed.

Question 15 Has the RFI, or another environmental investigation, provided the site characterization and waste release data needed to design and implement a stabilization activity? If No, can these data be obtained faster than the data needed to implement the final corrective measures?

Stabilization measures should not be considered for implementation until adequate site characterization and waste release data are available. Gathering data specifically for stabilization is not a worthwhile endeavor if the data for a final corrective measure are more readily available or quicker to obtain.

Timing and Other Procedural Issues Associated with Stabilization

Question 16 — Can stabilization activities be implemented more quickly than the final corrective measures?

Generally, stabilization measures should not be implemented unless they can be put in place more quickly and/or more efficiently, or will be effective significantly sooner than final corrective measures.

Question 17 — Can stabilization activities be incorporated into the final corrective measures at some point in the future?

Stabilization measures should generally be amenable to incorporation into the final corrective action project. Measures that cannot be successfully integrated into the overall site remediation should be able to significantly and predictably reduce threats to human health or the environment, or produce some other beneficial effects deemed important by the Administrator.

Conclusion

Question 18 — Is this facility an appropriate candidate for stabilization activities?

The decision of whether or not to implement stabilization measures at a facility is a professional judgment that should be based upon a careful weighing of factors such as those described above. There may also be other site-specific factors that enter into the decision, and these factors and their consequences should be documented in an appropriate manner.

In most cases, stabilization should only be implemented if it offers some clear advantages (in terms of protecting human health and the environment) over waiting for the implementation of final corrective measures. The stabilization measure used at a facility should be at least a part of the final corrective measure, with changes in timing and short-term goals (limiting contaminant movement versus contaminant cleanup) being the major points setting it apart from the final measures.

CORRECTIVE ACTION STABILIZATION QUESTIONNAIRE

Completed by: David Croxton
Date: 9/22/93

Background Facility Information

Facility Name: BEI Pier 91
EPA Identification No.: WAD 00081 2917
Location (City, State): Seattle, WA.
Facility Priority Rank: Medium

1. Is this checklist being completed for one solid waste management unit (SWMU), several SWMUs, or the entire facility? Explain.

Entire facility, i.e. Port of Seattle property ≈ 120 acres.

Status of Corrective Action Activities at the Facility

2. What is the current status of HSWA corrective action activities at the facility?

( ) No corrective action activities initiated
(X) RCRA Facility Assessment (RFA) or equivalent completed
( ) RCRA Facility Investigation (RFI) completed
( ) Corrective Measures Study (CMS) completed
( ) Corrective Measures Implementation (CMI) begun or completed
( ) Interim Measures begun or completed

3. If corrective action activities have been initiated, are they being carried out under a permit or an enforcement order?

( ) Operating permit
( ) Post-closure permit
(X) Enforcement order

4. Have interim measures, if required or completed [see Question 2], been successful in preventing the further spread of contamination at the facility?

( ) Yes Not Applicable
( ) No
( ) Uncertain; still underway

CONTINUE TO QUESTION 5 <u>ONLY</u> IF THE FOLLOWING CONDITIONS ARE MET:

- *The facility ranks "High" on the National Corrective Action Prioritization System; <u>AND</u>*
- *Interim Measures have not been initiated, or if initiated, have not been successful in preventing the further spread of contamination at the facility.*

Facility Releases and Exposure Concerns

5. To what media have contaminant releases from the facility occurred or been suspected of occurring?

(X) Ground water
(X) Surface water
( ) Air
(X) Soils

6. Are contaminant releases migrating off-site?

( ) Yes; Indicate media, concentrations, and level of certainty.

( ) No
(X) Uncertain Potential releases to Elliot Bay.

7a. Are humans currently being exposed to contaminants released from the facility?

( ) Yes
(X) No
( ) Uncertain

7b. Is there a potential for human exposure to the contaminants released from the facility over the next five to 10 years?

( ) Yes
( ) No
(X) Uncertain Perhaps via indirectly environmental receptors, e.g. fish.

8a. Are environmental receptors currently being exposed to contaminants released from the facility?

( ) Yes
( ) No
(X) Uncertain Perhaps via releases to Elliot Bay.

8b. Is there a potential that environmental receptors could be exposed to the contaminants released from the facility over the next five to 10 years?

(X) Yes
( ) No
( ) Uncertain

Anticipated Final Corrective Measures

9. If already identified or planned, would final corrective measures be able to be implemented in time to adequately address any existing or short-term threat to human health and the environment?

( ) Yes Not Applicable
( ) No
( ) Uncertain

Additional explanatory notes:
Final corrective measures not identified.

10. Could a stabilization initiative at this facility reduce the present or near-term (e.g., less than two years) risks to human health and the environment?

( ) Yes
( ) No
(X) Uncertain

Additional explanatory notes:
Depends on extent of releases to the Bay.

11. If a stabilization activity were not begun, would the threat to human health and the environment significantly increase before final corrective measures could be implemented?

( ) Yes
( ) No
(X) Uncertain

Additional explanatory notes:
See above

Technical Ability to Implement Stabilization Activities

12. In what phase does the contaminant exist under ambient site conditions?

- [X] Solid
- [X] Light non-aqueous phase liquids (LNAPLs)
- [ ] Dense non-aqueous phase liquids (DNAPLs)
- [X] Dissolved in ground water or surface water
- [ ] Gaseous
- [ ] Other _____

13. Are one or more of the following major chemical groupings of concern at the facility?

- [X] Volatile organic compounds (VOCs) and/or semi-volatiles
- [X] Polynuclear aromatics (PAHs)
- [ ] Pesticides
- [X] Polychlorinated biphenyls (PCBs) and/or dioxins
- [X] Other organics
- [X] Inorganics and metals
- [ ] Explosives
- [ ] Other_____

14. Are appropriate stabilization technologies available to prevent the further spread of contamination, based on contaminant characteristics and the facility's environmental setting? [See Attachment A for a listing of potential stabilization technologies.]

- [X] Yes; Indicate possible course of action.

Pump and treat - LNAPL recovery
slurry walls
soil removal

- [ ] No; Indicate why stabilization technologies are not appropriate; then go to Question 19.

_____
_____
_____

15. Has the RFI, or another environmental investigation, provided the site characterization and waste release data needed to design and implement a stabilization activity?

- [ ] Yes Uncertain. RFI has
- [ ] No identified plume, but more knowledge needed to design I.M.

If No, can these data be obtained faster than the data needed to implement the final corrective measures?

- [X] Yes
- [ ] No

Timing and Other Procedural Issues Associated with Stabilization

16. Can stabilization activities be implemented more quickly than the final corrective measures?

- [X] Yes
- [ ] No
- [ ] Uncertain

Additional explanatory notes:

Corrective measures on a sites wide basis may be delayed due to the number of parties (PRP's) involved.

17. Can stabilization activities be incorporated into the final corrective measures at some point in the future?

- [X] Yes
- [ ] No
- [ ] Uncertain

Additional explanatory notes:

_____
_____
_____

Conclusion

18. Is this facility an appropriate candidate for stabilization activities?

- (X) Yes
- ( ) No, not feasible
- ( ) No, not required

Explain final decision, using additional sheets if necessary.

Known "hot spots" and contaminated ground water. Stabilization measures may be beneficial to decrease the spread of contamination. Also, stabilization may be implemented prior to final corrective measures.